



**HARRIS CORPORATION**

**Government Communications Systems Division**

***Comment Response***

# ***REQUEST FOR INFORMATION ON USE OF 1675 – 1710 MHz BAND***

***ET Docket No. 10-123***

For:  
Federal Communications Commission  
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Washington, D.C. 20554

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THESE ITEM(S) / DATA HAVE BEEN REVIEWED IN ACCORDANCE WITH THE INTERNATIONAL TRAFFIC IN ARMS REGULATIONS (ITAR), 22 CFR PART 120.11, AND THE EXPORT ADMINISTRATION REGULATIONS (EAR), 15 CFR 734(3)(B)(3), AND MAY BE RELEASED WITHOUT EXPORT RESTRICTIONS.



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## **1.0 INTRODUCTION**

Harris Corporation, Government Communications Systems Division (GCSD), is pleased to provide the data contained herein to the Federal Communications Commission (FCC) in response to their *Request for Information on Use of 1675 – 1710 MHz Band*, ET Docket No. 10-123, published June 4, 2010.

### **1.1 Background**

Harris is qualified to respond with expert data to the FCC's Request for Information (RFI) through our experience in both weather satellite data processing and in wireless data communication.

#### **1.1.1 Weather Satellite Data Processing Background**

Harris GCSD is currently under contract to develop, deploy, and support the Federal Aviation Administration (FAA) in its mission to provide for the safe operation of aircraft within the United States. Two programs, in particular, deliver critical operational weather information to the FAA to provide real-time situational awareness of developing weather impact to air traffic in the National Air Space. These programs are:

- Operational and Supportability Implementation System (OASIS)
- WARP Maintenance and Sustainment Services (WMSS)

To provide for cost effective acquisition and dissemination of bulk weather information, Harris established the Harris Weather Data Service (HWDS) to collect and deliver the diverse weather information required by the FAA's mission. Among the data collected is weather satellite information which currently uses the portion of the radio frequency spectrum that is the subject of the FCC's Request for Information.

The HWDS and the FAA rely primarily on the Geostationary Operational Environmental Satellites (GOES) for weather satellite imagery in their operational environments. The HWDS operates ground stations for the acquisition of GOES-Variable (GVAR) format imagery from both operational GOES satellites (GOES-East and GOES-West). Both of these satellites operate within the frequency band that is the subject of this RFI.

#### **1.1.2 Wireless Data Communication Background**

Harris is a leading developer of state-of-the-art wireless technology for the Government and Law Enforcement communities. Our Wireless Products Group (WPG) portfolio includes flexible transceiver solutions in various configurations to best fit our customer needs. Engineers of our Mission Critical Networks (MCN) business area design, develop, deploy, and support the FAA Telecommunications Infrastructure (FTI), which includes satellite, microwave, and wireless communication. Our broadcast, radio, and signal intelligence capabilities offer industry's broadest signal processing portfolio that provides advanced applications and platforms for audio, video, and data communication.

### **1.2 Overview of Our Response to the Request for Information**

Our RFI response is provided in two sections. Section 1.0 provides an introduction and background of Harris' use of weather satellite information. Section 2.0 provides answers to the nine specific items of information requested in the RFI. Section 3.0 provides our conclusion and recommendation.

## **2.0 Responses to Request for Information**

The following information provides responses to the specific questions and topics provided in the FCC's Request for Information.

### **1. A description of the utility of the 1675-1710 MHz band for wireless broadband services, including any pairing, band plan, or other licensing approaches that would maximize this utility.**

Harris GCSD is not a provider of wireless broadband services; however, we have the following observations about this frequency.

- The band is, in broad terms, in the range currently used for commercial wireless systems (cellular, WiFi, etc.), roughly 450 MHz through 2200 MHz, so in that regard the frequency range is appropriate.
- 35 MHz is too narrow, most likely, to divide into a Downlink/Uplink pair arrangement – the downlink and uplink would be too close in frequency for effective filtering design. Either another band would need to be identified for band pairing, or a time division duplex (TDD) system would be needed so that both links could exist in the same 35 MHz band. Existing protocols such as Long Term Evolution (LTE) and Universal Mobile Telecommunications System (UMTS) provide TDD capabilities.
- 35 MHz is wide enough to subdivide into separately licensable sub-bands in 5, 10, 15 or 20 MHz blocks which are compatible with many existing wireless protocols such as LTE, UMTS, CDMA2000, and GSM.

### **2. Identity of the non-federal entities accessing the services operating in the 1675–1710 MHz band.**

Harris currently operates GOES-East and GOES-West ground stations that receive GOES data broadcast at 1685 MHz. The operational ground station is located at our HWDS facility in Palm Bay, FL, near latitude 28° 2' 56"N, longitude 80° 36' 07"W. Additionally, Harris operates a test bed ground station at its Melbourne, FL facility near latitude 28° 6' 40"N, longitude 80° 41' 56"W.

### **3. A description of the purpose of such use (i.e., the equipment is used to support TV weather forecasting or for conducting university research).**

The equipment is used to acquire satellite images for dissemination to the FAA in support of air traffic operations nationwide.

### **4. Which portions of the 1675-1710 MHz band are used?**

GOES-East and GOES-West both transmit their data at a frequency of 1685 MHz.

### **5. How often the service is used (e.g., every day, scheduled times of day, duration, etc.)?**

Data is acquired continuously from both GOES satellites (24 hours per day; 7 days per week)

**6. An estimate of the current investment in wireless equipment, including when it was obtained and put into use.**

“Wireless equipment” in this context is interpreted to mean the ground stations that HWDS operates for acquisition of GOES satellite imagery. These ground stations were acquired in 1988 and have undergone major renovations in 1994 and 2002. The investment in this ground station equipment was not tracked separately from our total investment in the HWDS and so cannot be determined. Replacement cost for the equipment is estimated at approximately \$50,000.

**7. A description of whether and how the information and services currently accessed can be obtained from other means; and if so, the anticipated costs and timeframes for implementing any alternatives.**

To our knowledge, GOES GVAR data is not available in its unaltered form from any other source other than direct reception of the satellite transmission.

High resolution GOES satellite imagery is available from the National Weather Service (NWS) via their NOAAPort Satellite Broadcast Network. However, this imagery is processed by the NWS into a map projection. This is a less desirable alternative because this processing introduces delays in the reception of the imagery. This, in turn, introduces a data timeliness risk into the imagery used by the FAA for air traffic management, and ultimately causes a risk of impact on the flying public. The use of this NOAAPort data would necessitate requirement changes by the FAA for their systems. Anticipated costs and schedule for implementing this as an alternative could be developed in response to an FAA directed change in their requirements

**8. Confirmation that, if the information currently available from the meteorological satellite service were received at only a few receive sites and distributed via terrestrial services, this would be a functionally equivalent substitute for the direct reception of the satellite and radiosonde services.**

Receiving GOES GVAR data at our HWDS facility via terrestrial services would be functionally equivalent, if there is no significant delay in data arrival introduced by the terrestrial services.

**9. Any other information interested parties would like to identify regarding use of the meteorological satellite and radiosonde services.**

While our primary concern is the potential risk of wireless broadband interference with our weather satellite reception, we also have a secondary concern of the risk of wireless broadband interference to radiosonde reception throughout the country. The HWDS acquires radiosonde data indirectly via the NWS’s NOAAPort Satellite Broadcast Network. This radiosonde data is used in the preparation of upper air weather maps for meteorologists and air traffic specialists involved in air traffic control. An interruption of reception at one or more of the NWS’s radiosonde receiving stations will degrade the quality of these weather maps, introducing an information gap in the data used for air traffic management. Furthermore, radiosonde information is fundamental input data for numerical weather prediction, which is relied upon by aviation interest for weather analysis and forecast.

### **3.0 CONCLUSION**

Harris Corporation, GCSD appreciates the opportunity to respond to the FCC's request for information. It is our belief that the reallocation of the 1675 – 1710 MHz band would create a risk of radio interference to the reception of critical satellite information used for air traffic control in the National Air Space, and ultimately lead to hazards to the flying public. Therefore, we recommend that the FCC investigate other possibilities to support the wireless broadband industry.